How to design Eco, Passivhaus and Zero Carbon Houses

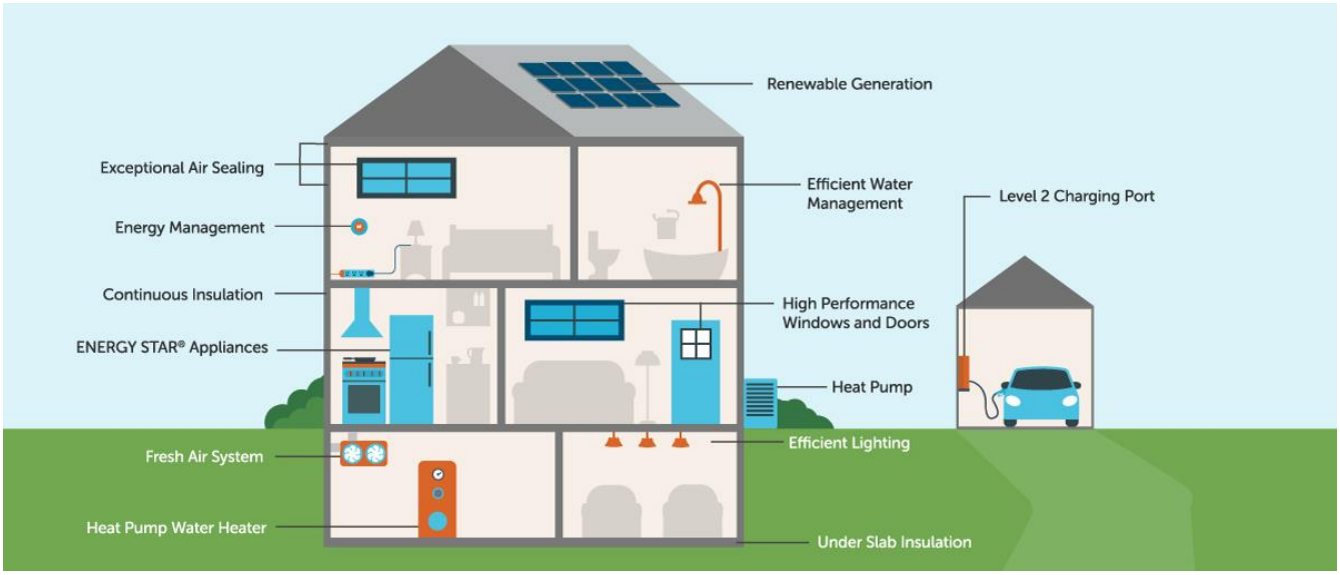

Figure 1.1 How to make your home net zero (Efficiency Vermont, 2021)

Eco Architects
Eco Architects place sustainability and the environment at the heart of their designs by creating energy producing and preserving designs for new and existing homes. This is to minimise the negative impact of the building sector on our environment and to provide new and comfortable designs that ensure our future.

Passivhaus Concept
Passivhaus is a design standard that aims to maintain comfortable temperatures with minimal energy usage. This is done by using sunlight , human and appliance-based heat to reduce the need for fossil fueled energy sources. Space heating energy must not exceed 15 kWh/m2 for the building to be considered to Passivhaus standard (Scott, 2020). The concept relies on the building having good air quality whilst needing near to no energy to heat or cool the building to maintain comfortable temperatures. Eco Architects focus on size, shape and orientation of homes and employ good heat retention, airtightness, natural ventilation and heat recovery systems to conform to Passivhaus standards (Scott, 2020). The benefits of a Passivhaus include the reduced need for energy which has less of an impact on the environment as well as therefore saving the homeowner energy costs in the long run. In the future, fossil fuels will eventually run out or even before then, possibly be banned because of harmful effects on the environment and so it is key that we move away from traditional house designs to self sufficient houses such as Passivhaus houses.

Zero Carbon Houses
Zero carbon houses are houses that produce zero to negative carbon emissions throughout construction and usage. Zero carbon may be achieved by using energy efficient materials and space heating and cooling technologies to reduce the amount of energy used. An efficient mechanical ventilation system will be necessary to control the air flow as this is key in controlling the heating of the building without the use of fossil fuel energy for heating (Efficiency Vermont, 2021). Some ways of creating a zero-carbon house are:
-Renewable energy source
-Efficient water management
-High quality Air sealing
-Continuous insulation and underfloor insulation
-High performance windows and doors
-Efficient lighting
-Heat Pump
-Fresh air system
-Electric charging port for a car
(Efficiency Vermont, 2021)

The benefits of a Carbon Neutral Home
Improvements to the buildings Air quality, performance and Comfort as well as considering a Zero Carbon future, therefore increasing the value Efficiency Vermont, 2021). Investing in a renewable energy source now will earn/ save you money in the long run. You would be more self sufficient and would not have to rely on external energy sources- e.g. through power outages, rising prices or when fossil fuels become scarce. You will shrink your carbon footprint and have less of an impact on global warming.

These are all things that we could design into our houses at Infinity studios to lower the carbon footprint of our designs. We will combine key aspects of Zero Carbon design with the use of reusable and recyclable materials to make our circular economy designs low to Zero carbon to save our customers money in the l0ng run and set them up for a greener future. This will lower ours and their Carbon footprint.

Image References

1.1 Efficiency Vermont, 2021. *How to make your home net zero* [Digital Image] Efficiency Vermont. Available at: https://www.efficiencyvermont.com/blog/how-to/how-to-make-your-home-net-zero [Accessed 25th October 2021]

Bibliography

Efficiency Vermont, 2021. *How to make your home net zero [Online].* Efficiency Vermont. Available at: https://www.efficiencyvermont.com/blog/how-to/how-to-make-your-home-net-zero [Accessed 25th October 2021]
Scott, B., 2020. *How to design Eco, Passivhaus and Zero Carbon Houses [2021 UK Edition]* [Online]. Urbanist Architecture. Available at: https://urbanistarchitecture.co.uk/how-to-design-eco-houses-passivhaus-and-zero-carbon-houses/ [Accessed 25th October 2021]